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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,738	07/26/2000	Takehiko Nakai	35.C14646	9374

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EXAMINER

AMARI, ALESSANDRO V

ART UNIT PAPER NUMBER

2872

DATE MAILED: 09/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/626,738

Applicant(s)

NAKAI, TAKEHIKO

Examiner

Alessandro V. Amari

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 14 June 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 7-12 and 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishii U.S. Patent 6,157,488.

In regard to claim 7, Ishii discloses (see Figure 12) a diffraction optical element in which a plurality of diffraction gratings are laminated, comprising: a first diffraction grating (101) which is formed on a curved surface with a material of a predetermined dispersion; and a second diffraction grating (103) which is formed on a curved surface with a material of a dispersion different from that of the first diffraction grating and adjacent to the first diffraction grating, wherein the pitches at positions of tips of corresponding grating portions of the first and second diffraction gratings are equal over the area of use as shown in Figure 12 and as described in column 15, lines 8-35.

Regarding claim 8, Ishii discloses (see Figure 12) that the substrates on which said diffraction gratings are formed are joined together in the non-grating area (102) of each of said diffraction gratings as described in column 15, lines 8-16.

Regarding claim 9, Ishii discloses that at least one of said laminated diffraction gratings has at least one diffraction grating differing from it in the direction of the grating shape of the grating portion as shown in Figure 12.

Regarding claim 10, Ishii discloses that the wavelength area used is a visible range as described in column 13, lines 3-8.

Regarding claim 11, Ishii discloses that at least one of said plurality of diffraction gratings is such that the material forming said diffraction gratings is the same as the material forming a substrate on which said diffraction gratings are provided as described in column 13, lines 35-54.

Regarding claim 12, Ishii discloses that said substrate has lens action as described in column 13, lines 35-54.

Regarding claim 14, Ishii discloses that said plurality of diffraction gratings are laminated so that the diffraction efficiency of a particular order may heighten in the entire wavelength area used as described in column 14, lines 31-64.

Regarding claim 15, Ishii discloses an optical system using the diffraction optical element as shown in Figures 22 and 23 and as described in column 13, lines 9-30.

Regarding claim 16, Ishii discloses an imaging optical system as shown in Figures 22 and 23 and as described in column 13, lines 9-30.

Regarding claim 17, Ishii discloses an observation optical system as shown in Figures 22 and 23 and as described in column 13, lines 9-30.

Regarding claim 18, Ishii discloses that the first and second diffraction gratings are disposed via an air layer as described in column 11, lines 50-60.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii in view of Ogino et al. U.S. Patent 5,995,279.

Regarding claim 13, Ishii teaches the invention as set forth above but does not teach the diffraction optical element formed on a cemented surface of a cemented lens. Ogino et al. does teach the diffraction optical element formed on the cemented surface of a cemented lens as shown in Figures 5A-5F and as described in column 3, lines 3-33. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the diffraction grating on the cemented surface of a cemented lens as taught by Ogino et al. in the diffractive optical element of Ishii in order to create a compact diffractive optical element.

Response to Arguments

5. Applicant's arguments filed 14 June 2002 have been fully considered but they are not persuasive.

Applicant argues in regard to claim 7, that Ishii shows (see Figure 12) the outermost surfaces 303 and 304 of the optical element being curved but does not show the shape of the surfaces forming the relief patterns (i.e., the gratings) as being curved. Furthermore, the Applicant argues that the surfaces on which those diffraction gratings are formed are flat because the tips of each of those diffraction gratings are aligned in a straight line rather than a curved line.

In response to this argument, the Applicant is reminded that the rejection is based upon the claim recitation. Figure 12 of Ishii clearly shows optical regions 101, 103 or surfaces, which are shaped into curves and relief patterns 201, 202 or first and second diffraction gratings which are formed on these curved surfaces (see also column 15, lines 8-13). Therefore, contrary to the applicant's assertion, the surfaces on which those diffraction gratings are not flat. Furthermore, one can see that the pitches (i.e., groove spacing) at positions of tips of corresponding grating portions of the first and second gratings are equal of the area of use as clearly shown in Figure 12.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703) 306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava *QV4*
August 26, 2002


Cassandra Spyrou
Supervisory Patent Examiner
Technology Center 2800